TITLE OF INVENTION

MEDAL KEEPING AND PAYING SYSTEM

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a medal keeping and paying system provided in a game center such as an amusement arcade, a penny arcade or the like.

2. Description of the Earlier Art

A game center is provided with various medal game machines played with medals. The "medals" used to play with medal game machines are coin-like metal objects developed for use with only medal game machines installed in game centers. A game player converts money into medals peculiar to the game center, and plays with the medal game machine. In the medal game machine, there exists a game machine in which if a player won the medal game, the player can receive more payback medals than input or expended medals. It is prohibited to take out such payback medals outside the game center. If a player goes out from the game center, the player give the medals in the charge of the game center, and when the player comes back to the game center next time, the player receives medal back, and can play the medal game again.

The medals in the charge of the game center must be returned to definitely the right person who actually gave the medals in the charge of the game center. The present assignee

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proposed invention as described in Japanese Patent Application Laid-open No.H7-171240.

This proposal includes a keeping section for receiving medals, a paying section for paying medals, an inputting section of optical data of palm print or finger print of a depositor, a magnetic card issuing section, a card inputting section, and a processing section for predetermined control processing. This proposal issues a magnetic card in which optical data such as fingerprint of a depositor and the number of keeping medals are recorded. Authenticates the right person if the recorded data in the magnetic card and optical data such as fingerprint coincide with each other, and only when the right person was authenticated, the right person is paid in accordance with the medals on deposit. Therefore, it is impossible that a person other than the right person gets the medals on deposit.

Meanwhile, more than one medal keeping and paying apparatus is installed depending upon scale of a game center. In such a case, the same type of two or more medal keeping and paying apparatuses having the same processing function are installed, and this may increase costs. Further, keeping and paying processing of medals must be managed in each apparatus, and the management becomes complicated.

SUMMARY OF THE INVENTION

It is an object of the physical information to provide a medal keeping and paying system in which it is easy to install additional medal keeping and paying apparatus inexpensively,

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and medal-keeping and paying management can be centralized in the entire game center.

A first aspect of the present invention provides a medal keeping and paying system comprising a medal keeping and paying apparatus, the medal keeping and paying apparatus comprising, medal keeping means for counting and keeping an input medal, medal paying means for paying a medal if a payment signal is input, right person information inputting means for inputting right person peculiar information for identifying a right person such as physical information to authenticate the right person, operation information storing means for storing count information of at least the medal keeping means, right person information storing means in which the right person peculiar information for identifying the right person such as the physical information to authenticate the right person is previously stored, a memory for temporarily keeping information which is being processed such as the count information of the medal keeping means, and a processing section which authenticate the right person from the right person peculiar information input from the right person information inputting means and the right person peculiar information stored in the right person information storing means, and which outputs, when the right person is authenticated, a payment signal to the medal paying means based on the count information of the keeping medal stored in the operation information storing means and controls payment of a medal on deposit from the medal paying means, wherein the processing section includes a network interface,

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and inputs, stores and renews the count information of at least the medal keeping means and right person authorization information through the network interface, and the processing section can access the operation information storing means through the network interface.

A second aspect of the present invention provides a medal keeping and paying system according to the first aspect, comprising a server's medal keeping and paying apparatus having the operation information storing means, and a client's medal keeping and paying apparatus, the client's medal keeping and paying apparatus comprising, medal keeping means for counting and keeping an input medal, medal paying means for paying a medal if a payment signal is input, right person information inputting means for inputting right person peculiar information for identifying a right person such as physical information to authenticate a right person, right person information storing means in which the right person peculiar information for identifying the right person such as the physical information to authenticate the right person is previously stored, a memory for temporarily keeping information which is being processed such as the count information of the medal keeping means, and processing section which authenticates a right person from the right person peculiar information input from the right person information inputting means and the right person peculiar information stored in the right person information storing means, and when the right person is authenticated, the processing section accesses the operation information storing

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means through the network interface, outputs a payment signal to the medal paying means based on the count information of a medal on deposit stored in the operation information storing means, and controls the payment of the medal on deposit from the medal paying means, wherein the number of the client's medal keeping and paying apparatus is increased through network, and wherein at least the count information of the medal keeping means and the right person authorization information in the client's medal keeping and paying apparatus to the server's medal keeping and paying apparatus through the network interface, each input information is stored and renewed in the operation information storing means, the client's medal keeping and paying apparatus can access the operation information storing means of the server's medal keeping and paying apparatus.

A third aspect of the present invention provides a medal keeping and paying system according to the first or second aspect, wherein the number of medal keeping and paying apparatus having the operation information storing means is two.

A fourth aspect of the present invention provides a medal keeping and paying system according to any one of the first to third aspects, wherein the right person information storing means stores the right person peculiar information, and is an information record card possessed by a right person, the medal keeping and paying system further comprises information reading means for reading the right person peculiar information from the information record card, the processing section processes

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the right person peculiar information read from the information record card by the information reading means to authenticate the right person.

A fifth aspect of the present invention provides a medal keeping and paying system according to any one of the first to third aspects, further comprising index information inputting means for inputting index information to read out the right person peculiar information from the right person information storing means, wherein the processing section processes the right person peculiar information read out by the input index information to authenticate the right person.

According to the first aspect, a medal can be input to the medal keeping means and deposited therein. The medal paying means can pay back the medal by inputting payment signal. The right person information inputting means can input the right person peculiar information to identify the right person such as the physical information to authenticate the right person. The operation information storing means can store the count information of at least the medal keeping means. The right person information storing means can store the right person peculiar information to identify the right person such as the physical information.

The processing section authenticates the right person from the right person peculiar information input from the right person information inputting means and the right person peculiar information stored in the right person information storing means. If the right person could be authenticated, the

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payment signal is output to the medal paying means and it is possible to control the payment of the deposited medals from the medal paying means based on the count information of the deposited medals stored in the operation information storing means. Therefore, it is possible to authenticate the right person to pay back the deposited medals, and to prevent a person other than the right person gets the medals on deposit.

Accordingly, the processing section includes the network interface. The count information of at least the medal keeping means and the right person authorization information are input to the operation information storing means through the network interface, and they are stored and renewed, and it is possible to access the operation information storing means through the network interface. Therefore, the medal keeping and paying apparatus can be used in a stand-alone manner of course, and even when another medal keeping and paying apparatus is additionally installed, it can be installed easily and inexpensively. Even if the other medal keeping and paying apparatus is installed, the medal keeping information and the right person authorization information of all the medal keeping and paying apparatuses are stored in the operation information storing means, and the management of the information can easily be centralized.

According to the second aspect, in addition to the effect of the first aspect, in the client's medal keeping and paying apparatus, medals input from the medal keeping means can be counted and deposited. In the medal paying means, medals can

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be paid by inputting the payment signal. In the right person information inputting means, the right person peculiar information for identifying the right person such as the physical information can be input to authenticate the right person. In the right person information storing means, the right person peculiar information for identifying the right person such as the physical information can be previously stored to authenticate the right person. Information such as the count information of the medal keeping means which is being processed can be kept temporarily. Authentication of right person is carried out from the right person peculiar information input from the right person information inputting means and the right person peculiar information stored in the right person information storing means, and when the right person could be authenticated, the operation information storing means is accessed through the network interface, the payment signal is output to the medal paying means based on the count information of the deposited medal stored in the operation information storing means, and the processing section can control the payment of the deposited medals from the medal paying means. The medal keeping and paying apparatus having the operation information storing means is defined as a server, and a client's medal keeping and paying apparatus comprising the medal keeping means, the medal paying means, the right person information inputting means, the right person information storing means, the memory and the processing section is additionally installed through the network, at least the count information of the medal

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keeping means and the right person authorization information
of the client's medal keeping and paying apparatus are input
to the server's medal keeping and paying apparatus through the
network interface, the input various information are stored in
the operation information storing means and they can be renewed.
The client's medal keeping and paying apparatus can access the
operation information storing means of the server's medal
keeping and paying apparatus. Therefore, the client's medal
keeping and paying apparatus can easily and inexpensively be
added to the server's medal keeping and paying apparatus.
Further, all of the medal keeping and paying apparatuses can
easily be managed.

According to the third aspect, in addition to the effect
of the first or second aspect, at least two medal keeping and
paying apparatuses each having the medal keeping and paying
apparatus are installed. Therefore, at least one of them can
back up the other one and thus, even when one of them is out
of order, the entire system can effectively function.

According to the fourth aspect, in addition to the effect
of any one of the first to third aspect, the right person
information storing means stores the right person peculiar
information, and is an information record card possessed by a
right person, the medal keeping and paying system further
comprises information reading means for reading the right
person peculiar information from the information record card,
the processing section processes the right person peculiar
information read from the information record card by the

information reading means to authenticate the right person. Therefore, if another person has the information record card and tries to use the card, since the right person peculiar information of the information record card and the right person peculiar information input by the right person information inputting means are different from each other, it is possible to reliably prevent from paying to the other person other than the right person.

According to the fifth aspect, in addition to the effect of any one of the first to third aspect, the system further comprises index information inputting means for inputting index information to read out the right person peculiar information from the right person information storing means, and the processing section processes the right person peculiar information read out by the input index information to authenticate the right person. Therefore, only when the right person peculiar information read out by the index information and the right person peculiar information input by the right person information inputting means coincide with each other, the medals can be paid. Even if another person obtained the index information and tried to use the card, since the right person peculiar information of the information record card and the right person peculiar information input by the right person information inputting means are different from each other, it is possible to reliably prevent from paying to the other person other than the right person.

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BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram showing a LAN of medal keeping and paying apparatuses through radio according to an embodiment of the present invention;

Fig. 2 is a perspective view of the medal keeping and paying apparatus according to the embodiment;

Fig. 3 is a block diagram of the medal keeping and paying apparatus according to the embodiment;

Fig. 4 is a block diagram of a mechanism section of the medal keeping and paying apparatus according to the embodiment;

Fig. 5 is a block diagram of a processing section of the medal keeping and paying apparatus having a server function according to the embodiment;

Fig. 6 is a block diagram of a processing section of the medal keeping and paying apparatus having a client function according to the embodiment; and

Fig. 7 is a block diagram for explaining data storing and renewal path according to the embodiment.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Fig. 1 shows an embodiment of the present invention, and is a block diagram of a state in which a plurality of medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E are connected to each other local area wireless network. Of the medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E, two of the medal keeping and paying apparatuses 1A and 1B have server functions, and the other medal keeping and paying apparatuses

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1C, 1D and 1E have client functions. The medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E can be connected through local area wire network also.

Each of the medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E has a LAN card 3 as a network interface. The same information from the medal keeping and paying apparatuses 1C, 1D and 1E having client functions is input to the medal keeping and paying apparatuses 1A and 1B having server functions through the LAN cards 3 and stored in respective hard disk.

These medal keeping and paying apparatuses 1A and 1B have monitoring functions to monitor each other, and if one of them is out of order, the other one backs up. Here, it is possible to arrange such that the medal keeping and paying apparatus 1B has the monitoring function for the medal keeping and paying apparatus 1A, and when the medal keeping and paying apparatus 1A is out of order, the medal keeping and paying apparatus 1B backs up, or it is possible to arrange in the reverse manner.

Fig. 2 is a perspective view of the medal keeping and paying apparatus (1A, 1B, 1C, 1D or 1E). As shown in Fig. 2, each of the medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E is an apparatus of an independent box type, and is provided at its outer surface with a medal input port 5, a medal paying port 7, a card insertion port 9, a fingerprint inputting section 11, a touch panel display 13 and an input switch 15.

The medal input port 5 is a portion from which a medal to be deposited is input. The medal paying port 7 is a portion from which deposited medal is received. The card insertion port

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9 is a portion into which an IC card 17 is inserted as an information record card. The IC card 17 stores the fingerprint information as a physical information which is right person peculiar information for identifying the right person. The IC card 17 is possessed by the right person. In this embodiment, the IC card 17 constitutes right person information storing means.

The fingerprint inputting section 11 constitutes right person information inputting means. The fingerprint inputting section 11 is a portion for inputting the fingerprint information as the physical information as the right person peculiar information for identifying the right person to authenticate the right person. As the right person peculiar information, a code number may also be used other than the physical information. Examples of the physical information other than the fingerprint information are palm print, eye information, face information, DNA, voice print, vein of back of hand.

The touch panel display 13 displays various information and inputs various information. The input switch 15 inputs intention of the player for depositing or receiving the medal. By pressing the input switch 15, the medal keeping and paying apparatus 1A can actuate.

Fig. 3 is a block diagram of the medal keeping and paying apparatus (1A, 1B, 1C, 1D or 1E). As shown in Fig. 3, each of the medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E comprises a mechanism section 19, a processing section 21, a

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card inputting section 23, a fingerprint inputting section 11, an instruction display input section 27, a machine control section 29, a power drive control section 31, a voice processing section 33, a speaker 35, a network control section 37 and a radio unit 39.

The mechanism section 19 is controlled by the processing section 21 through the machine control section 29 and the power drive control section 31. The processing section 21 inputs and outputs a signal between the card inputting section 23, the fingerprint inputting section 11 and the instruction display input section 27. The card inputting section 23 constitutes information reading means for reading information from the information record card. In this embodiment, the card inputting section 23 reads the fingerprint information from the IC card 17 shown in Fig. 2, and inputs the same to the processing section 21. Therefore, a right person is authenticated by the processing section 21, the medal keeping information is stored and renewed in the processing section 21 as will be explained later, and the processing section 21 output a payment signal to the medal paying means, and controls payment of the deposited medals.

The voice processing section 33 processes various voice information for a person depositing or receiving medals, and the voice information is output from the speaker 35. Therefore, a person who deposits or receives the medals can carry out appropriate operation by instructions of voice output.

Connection of the processing section 21 is established

through a local area wireless network as shown in Fig. 1 by the network control section 37 and the radio unit 39.

The mechanism section 19 is arranged as shown in Fig. 4. The mechanism section 19 includes a keeping section 41 and a paying section 43.

The keeping section 41 constitutes the medal keeping means, and keeps a medal input from the medal input port 5 shown in Fig. 2. The keeping section 41 includes a kept-medal counter 45 and a receiving stock 47. The kept-medal counter 45 counts a deposited medal, and outputs its count information to the processing section 21. After the kept-medal counter 45 counted the medals, the receiving stock 47 recieves the medals and stocks them by a predetermined amount.

The paying section 43 constitutes the medal paying means, and pays medals to the medal paying port 7 shown in Fig. 2 if the payment signal is input from the processing section 21. The paying section 43 includes a paying stock 49, a belt conveyer 51 and a paying-medal counter 53.

The paying stock 49 stocks medals sent from the receiving stock 47 through the belt conveyer 55 and the medal lift 57 as paying medals. The belt conveyer 51 controls a transfer amount from the paying stock 49 to the paying-medal counter 53. The paying-medal counter 53 counts the medals to be paid and pays the medals to the medal paying port 7, and the counted result is input to the processing section 21 as the paying information.

Fig. 5 is a block diagram of the processing section 21 (21A, 21B) of the medal keeping and paying apparatuses 1A and

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1B each having the server function. As shown in Fig. 5, the processing section 21 (21A, 21B) comprises an MPU card 59, a LAN card 61, a memory 63, a hard disk 65 and a voice card 67.

The LAN card 3 is an interface for connecting the apparatus to the local area wireless network, and private addresses are written therein as IP address. The hard disk 65 constitutes the operation information storing means in this embodiment, and inputs and stores the count information of the kept-medal counter 45 and the paying-medal counter 53 and the right person authorization information. In the hard disk 65, various applications for the medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E.

The MPU card 59 carries out various calculations. The voice card 67 processes voice, and outputs voice for various operational instructions from the speaker 35. The memory 63 temporarily holds information which is being processed such as the count information of the kept-medal counter 45 and the paying-medal counter 53.

The processing section 21 of each of the medal keeping and paying apparatuses 1C, 1D and 1E each having the client function is arranged as shown in Fig. 6. Each of the processing section 21 (21C, 21D, 21E) includes an MPU card 59, a LAN card 3, a memory 63 and a voice card 67, and does not include a hard disk. The client's medal keeping and paying apparatuses 1C, 1D and 1E commonly use the hard disks 65 of the server's medal keeping and paying apparatuses 1A and 1B. The medal keeping and paying apparatuses 1C, 1D and 1E can be provided with hard

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disks.

In the hard disk 65, operation data, operation log, keeping information as client list log, paying information, right person authorization information and the like are stored as data, and they are renewed always through the LAN card 3 when they are renewed.

If a game player finishes a medal game and deposit the medals, the player uses any one of the medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E, and pushes the input switch 15 of that apparatus. By operating the input switch 15, selected one of the medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E can be operated.

Next, the apparatus is operated in accordance with display on the touch panel display 13 and voice instructions from the speaker 35.

First, the IC card 17 is inserted from the card insertion port 9. By inserting the card, the card inputting section 23 reads the fingerprint information and outputs the same to the processing section 21. Next, the player puts his or her finger designated by the fingerprint inputting section 11, thereby reading the fingerprint. With this, the fingerprint inputting section 11 optically or electronically reads the fingerprint and inputs the same to the processing section 21.

In the processing section 21, the fingerprint information read by the card inputting section 23 and the fingerprint information read by the fingerprint inputting section 11 are compared, and if the right person was authenticated,

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instructions for inputting medals into the medal input port 5 are output to the player from the touch panel display 13 and the speaker 35. If the right person could not be authenticated, instructions for denying the payment is output from the touch panel display 13 and the speaker 35.

Medals input from the medal input port 5 are counted by the kept-medal counter 45 of the keeping section 41 shown in Fig. 4, its count information is input to the processing section 21 as deposited medal information. The counted medals are received by the receiving stock 47 and stocked therein. The medals are sent from the receiving stock 47 to the paying stock 49 of the paying section 43 through the belt conveyer 55 and the medal lift 57, and reserved for payment.

Next, when medals are paid, the input switch 15 is operated, the IC card 17 is inserted from the card insertion port 9, and a fingerprint is input from the fingerprint inputting section 11. If the right person is authenticated, then the deposited medals are paid from the medal paying port 7. The medals are paid by the payment signal from the processing section 21 to the paying section 43. In the paying section 43, the medals are counted by the paying-medal counter 53 under control of the belt conveyer 51 and the deposited medals are paid. The count result by the paying-medal counter 53 is input to the processing section 21 as the paying information. When the medals are paid, the player can arbitrarily select whether all the deposited medals should be paid or some of them should be paid.

As described above, only a person who deposited medals can be paid the deposited medals. Therefore, depositing and paying operations can be carried out automatically.

In the server's medal keeping and paying apparatuses 1A and 1B, keeping information of medals, the paying information and the right person authorization information which authenticated the right person are directly stored and renewed in respective hard disks 65 through the LAN cards 3 as shown in Fig. 7.

In the client's medal keeping and paying apparatuses 1C, 1D and 1E, data is once stored in the memory 69 in Fig. 6, and the data is sent to hard disks 65 of the server's medal keeping and paying apparatuses 1A and 1B and renewed.

Operation data, operation log, client list log and the like in the medal keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E are displayed on the touch panel display 13, but in the server's medal keeping and paying apparatuses 1A and 1B, such information is displayed by accessing the respective hard disks 65 by the IP address directly.

In each of the client's medal keeping and paying apparatuses 1C, 1D and 1E, the above information can be displayed by accessing the hard disk 65 of the server's medal keeping and paying apparatus 1A by the IP address through LAN.

When each of the server's medal keeping and paying apparatuses 1A and 1B is used in a stand-alone manner, the interface for accessing the hard disk 65 is the LAN card 3.

When the server's medal keeping and paying apparatus 1A

or 1B is used in the stand-alone manner, and when the client's

medal keeping and paying apparatuses 1C, 1D and 1E are

additionally installed through LAN, the interface for accessing

data is the same, one program suffices for data access, and the

apparatus can be produced inexpensively.

The client's medal keeping and paying apparatuses 1C, 1D

and 1E do not require the hard disk, and when further apparatus

is additionally installed, it can be installed inexpensively.

Further, it is unnecessary to separately manage the medal

keeping and paying apparatuses 1A, 1B, 1C, 1D and 1E, it is

possible to access the hard disk 65 of the server's medal keeping

and paying apparatus 1A by a manager's management apparatus to

download data, and the apparatus can be managed in centralized

manner, which makes the management easy.

Although the right person is authenticated by reading the

fingerprint information stored in the IC card 17 in the above

embodiment, the right person can also be authenticated in such

a manner that fingerprint information of the right person

registered in the hard disk 65 is previously stored as the right

person information storing means, a fingerprint index is read

by the card inputting section using a magnetic card in which

the fingerprint index is stored is used as the index information

inputting means, or the touch panel display 13 is used as the

index information inputting means to input the fingerprint

index. That is, the fingerprint information is read out from

the hard disk 65 by reading or inputting the fingerprint index,

the read fingerprint information and the fingerprint

information input from the fingerprint inputting section 11 are compared with each other, and the right person can be authenticated.

In the above embodiment, two server's medal keeping and paying apparatuses 1A and 1B are provided and both of them have the back up functions, but only one of them may have the back up function. The client's medal keeping and paying apparatuses 1C, 1D and 1E may be added depending upon a scale of a game center.

In the present invention, depositing and paying operations of medals are explained as the medal keeping and paying apparatus, it is of course possible to use pachinko balls, coins, or other chips instead of medals.

The present invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the present invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.